Approved For Release 2005/08/22 : CIA-RDP85T00875R001900020095-2

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CENTRAL INTELLIGENCE AGENCY
WASHINGTON, D.C. 20505

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CIA/OER/S-06125-74

3 June 1974

MEMORANDUM FOR: Mr. Anthony Cruit
FCA/FAS
Department of Agriculture

SUBJECT : The Fertilizer Supply Situation in the USSR, Eastern Europe, UAR and PRC

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1. The attached study is for your information and retention. A separate copy has been forwarded to Dick Reidinger, ERS/FDCD.

25X1A 2. If you wish to discuss this matter further you may contact

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36

25X1

25X1

The Fertilizer Supply Situation in the USSR, Eastern Europe, UAR and PRC

3 June 1974

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25X1

25X1

TABLE OF CONTENTS

25X1

25X1

Tables

25X1

25X1

The Fertilizer Situation in the USSR

Short-run Situation (1974-75)

1. Production

Development of the Soviet fertilizer industry continues to receive a fairly high priority, as evidenced both by recent gains in output -- up by one-third in 1971-73 -- and by substantial purchases of Western equipment. In 1974 Soviet production of fertilizers is scheduled to rise by 12.6% (nutrient basis) to 19.6 million tons*, with a further increase to 22.2 million tons* in 1975. The Ministry of the Chemical Industry has pledged to exceed its production target for 1974 by 150,000-160,000 tons (nutrient basis). One-half of the overage is to consist of nitrogen fertilizers. At least six large ammonia installations are to be completed in 1974 (two are already in operation), and five complex fertilizer units and at least one triple superphosphate unit also are to be commissioned. New capacity amounting to about 750,000 tons of potassium fertilizers (nutrient basis) is to be completed at the third Berezniki Potassium Combine.

2. Constraints

The availability of raw materials is unlikely to be

* Plans for 1974 and 1975 given above include quantities going for phosphate animal feeds.

25X1

a serious constraint in Soviet production of fertilizers. Although output of natural gas in 1971-73 failed to reach annual targets set in the five year plan (1971-75), there is little evidence that a lack of gas materially affected production of ammonia. Output of apatite concentrate, the major Soviet phosphate raw material, reached 13.4 million metric tons in 1973, exceeding plan by 424,000 tons. Even if production plans for phosphate raw materials are not met in the next few years, Soviet production of phosphate fertilizers will not necessarily be affected because the USSR can reduce its sizable exports of apatite concentrate (6.3 million metric tons in 1972). Because of earlier delays in construction of new production capacities for phosphate and complex fertilizers, however, the USSR will continue to experience shortages of these types in the short-run despite introduction of substantial new capacity in 1974-75.

Operation and maintenance of the larger ammonia installations purchased in the West as well as new models of Soviet fertilizer equipment could prove a short-run deterrent to expansion of fertilizer output in the USSR. The first of five 450,000 ton/year ammonia plants purchased in the West went into operation in 1973 and a second unit was commissioned in early 1974. No major problems have been reported but it is too early to make a final judgment.

Beyond the production stage, the USSR will continue to experience substantial losses of fertilizer nutrients in 1974-75 during transportation, storage and application. Storage capacity is insufficient, particularly on the farms, and the situation is aggravated because of underutilization of existing storage at railheads. Mechanization of loading and unloading operations is far from adequate.

3. Supply and Use

Heavy fertilization of Soviet crops will be especially important in 1974 following the large 1973 harvest that reduced soil nutrients. Almost half of the 15-16 million tons* of fertilizer nutrient going to Soviet agriculture in 1974 is to be used on grain. The allocation to grain is said to be more than double the level in 1970. According to a Soviet text, each additional ton of fertilizer nutrient applied to grain increases yields by five tons.** Over the next few years the Soviets hope to achieve a 10% increase in per capita grain output, which means a harvest approaching 250 million tons*** (gross basis).

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* Estimated on the basis of 1974 Soviet target to supply agriculture with 64.6 million tons of fertilizers, expressed in Soviet standard units.

** Savinskiy, E.S., Khimizatsiya Narodnogo Khozyaystva i Proportsii Razvitiya Khimicheskoy Promyshlennosti, Moscow, 1972, p. 244.

*** Soviet Weekly, 16 March 1974.

One Soviet source calculates future fertilizer needs based on an assumption that the per capita grain requirement will be 1,000 kilograms when the Soviet population reaches 275 million.* The per capita requirement given apparently includes grain for animal feed as well as for human consumption.

er Trade

The USSR is a net exporter of fertilizer, chiefly potassium salts. Sales of nitrogen fertilizer have been modest by world standards but have increased fairly steadily over the past decade, reaching about 400,000 tons of nutrient in 1972. The USSR also exports relatively small quantities of phosphate fertilizer (chiefly single superphosphate), but in 1972 was a net importer, receiving 104,000 tons (P_2O_5) compared to exports of 93,000 tons. Preliminary data on trade in 1973 suggests that Soviet exports of potassium salts rose and that imports of phosphate fertilizers fell to one-fifth the 1972 level.

Given the chaotic state of today's world fertilizer markets, even short-run forecasts of fertilizer trade are subject to wide margins of error. Political considerations or producers' desires to profit from high prices and soaring

* Savinskiy, E.S., Op. Cit, p. 258.

demand can easily upset calculations based on a nation's plans or estimated domestic requirements. We have attempted to project Soviet trade data only for nitrogen fertilizers. We believe that the USSR has the capability to export a minimum of 400,000 tons of nitrogen fertilizer in 1974 (nutrient basis).

Long-range Situation

1. Production and Raw Materials

Soviet production and consumption plans for 1980 given in this report are based mainly on information provided at the 2nd Interregional Symposium on Fertilizers held in Kiev, 21 September to 1 October 1971. Virtually the same production data for 1980 (but expressed in Soviet standard units) appear in a 1973 Soviet publication.* Such preliminary plans should be considered subject to change, particularly if Soviet harvests in the next few years are very good. The large number of fertilizer installations now under construction in the USSR, however, suggests that future increases in production will continue to be substantial. The effect of the increased fertilizer

* Volfkovich, S.I., Puti Proizvodstva Mineral'nykh Udobreniy, Moscow, 1973, Izdat "Khimiya", Seriya Khimiya # 12, 1973, Signed for Press 20 November 1973.

supply on Soviet agriculture will, however, partially depend on whether sufficient resources are allocated to improve transportation, storage and application of fertilizers.

Raw materials will provide few constraints. Soviet gas reserves will easily support the planned level of nitrogen production. Soviet phosphate deposits, apart from the Kola apatites, do not have a very high nutrient (P_2O_5) content and larger quantities of poorer ores will have to be processed, especially those at Karatau. New sources of apatites that will be exploited include those at or near Kovdor (Kola Peninsula), Zima (Irkutsk Oblast), and Oshurkovo (Buryat ASSR). Other measures that will mitigate the phosphate raw material situation include the 20-year Soviet-Occidental agreement whereby the Occidental Petroleum Corporation will provide one million tons per year of superphosphoric acid starting in 1978 in exchange for Soviet ammonia, urea, and potash. In addition, the USSR is to receive phosphate rock from Morocco under terms of a 30-year agreement that calls for the Soviets to aid Morocco in geological exploration and construction of a phosphate mine and to provide certain products, including ammonia, sulfur, oil and other items.

According to one Soviet source*, the USSR has enough

* Voprosy Ekonomiki #1, January 1974, p. 35.

potassium to last more than 500 years. Major Soviet potassium deposits are located in the Perm area and in Belorussia. Experiments are now being conducted aimed at future exploitation of large deposits in the Gaurdak area of Turkmen, where a solution mining process is to be used.

2. Fertilizer Trade

Soviet fertilizers will have an increasing impact on world markets after 1975 or 1976. This appears likely both because of the favorable Soviet prospects for raw materials and energy and because of existing Soviet agreements and contracts that call for Soviet payment in fertilizers. For example, 13 chemical plants* that are to be supplied to the USSR by Italian firms under terms of agreements made in 1973-74 are to be paid for in part with Soviet ammonia and urea. In addition, the Soviet-Occidental agreement cited earlier will result in large Soviet exports of ammonia, urea and potash; although sales of these materials in world markets will be handled by Occidental Petroleum or its agents if the agreement is implemented as planned.

* The plants include four large ammonia installations, two urea units and seven other chemical plants.

Miscellaneous

Prices

The USSR employs a two-price system for fertilizers. Farm prices are subsidized and are substantially below producer wholesale prices for fertilizers. In 1970 farm prices of fertilizers were slightly less than 70%, and in [illegible] less than 60% of the level of industry wholesale prices.* In 1970 fertilizers accounted for slightly more than 6% of the production outlays for crops on Soviet state and collective farms.

* Semenov, V.N., Rol Finansov i Kredita v Razvitii [illegible]skogo Khozyaystva, Moscow 1973, p. 259.

Table 1

Nitrogen Fertilizer: USSR[a]

Units: 1,000 metric tons, nutrient basis (N)

	Consumption[b]	Production[c]	Exports[d]	Imports[d]
1965	2,282	2,712	84	
1966	1,656	3,188	157	
1967	3,089	3,753	255	3
1968	3,458	4,177	319	10
1969	3,798	4,509	308	5
1970	4,605	5,423	331	
1971	5,182	6,055	319	3
1972	5,624	6,551	405	5
1973	6,230	7,289[e]	362	N.A.
1974	6,553[e]	7,667[e]	445[e]	N.A.
1975 Plan	6,785	8,000	510[e]	N.A.
1980	11,300[f]	13,000[f]		

a/ Data are for calendar years.
b/ Reported supply to agriculture. Data are believed to be unadjusted for losses during transportation, storage and application.
c/ Production data probably include some tonnage that goes for non-fertilizer uses such as plastics or feed.
d/ Soviet trade data were computed as pure nutrient (nitrogen) based on the following assumptions concerning average nitrogen content:
1) Ammonium sulfate and miscellaneous nitrogen fertilizers - 20.5%
2) Ammonium nitrate -- 34%
3) Urea -- 46%
e/ Estimated.
f/ Data are based on preliminary Soviet plans for 1980.

Table 2

Phosphate Fertilizer: USSR[a/]

Units: 1,000 metric tons, nutrient basis (P_2O_5)

	Consumption Total[b/c/]	Of which: Ground Phosphate	Production Total[c/]	Of which: Ground Phosphate	Exports[d/]	Imports[d/]
1965	2,097	617	2,276	701	54.3	
1966	2,425	761	2,515	839	63.7	
1967	2,461	814	2,724	907	97.2	
1968	2,634	886	2,916	982	106.3	
1969	2,766	850	3,036	964	102.6	
1970	3,129	973	3,530	1,085	132.8	
1971	3,376	934	3,703	1,030	108.9	9.1
1972	3,498	904	3,777	1,011	95.3	104.0
1973	3,612	905	3,973[e/]	N.A.	92.3	20.6
1974	N.A.	N.A.	4,360[e/]	1,000[e/]	N.A.	N.A.
1975 Plan	4,442	627	5,100	1,000	N.A.	N.A.
1980	7,230[f/]	N.A.	9,930[f/]	N.A.		

a/ Data are for calendar years.
b/ Reported supply to agriculture. Data are believed to be unadjusted for losses during transportation, storage and application.
c/ Totals for production and consumption include soluble phosphate fertilizers and ground phosphate rock used for direct application as a fertilizer. Data for phosphate feeds usually included in Soviet fertilizer statistics, have been excluded here except for 1966 and 1968-69, when data on feed were not reported. The adjustment of production data after 1970 to exclude phosphate feeds was based on the quantities of these feeds supplied to agriculture. For periods prior to 1971, adjustments for feed were based on production data.
d/ Data are based on assumption that Soviet trade statistics on phosphate fertilizers refer to products with an average nutrient content of 18.7% P_2O_5.
e/ Estimated.
f/ Data are based on preliminary Soviet plans for 1980 that call for consumption of 7.9 million tons and production of 10.6 million tons of phosphate fertilizers (P_2O_5). We have adjusted these plans to exclude 670,000 tons that may be used as phosphate feeds.

25X1

25X1

Table 3

Potassium Fertilizer: USSR[a/]

Units: 1,000 metric tons, nutrient basis (K_2O)

	Consumption[b/]	Production[c/]	Exports[d/]	Imports
1965	1,891	2,366	343	-
1966	1,902	2,601	453	-
1967	2,136	2,857	568	-
1968	2,210	3,111	716	-
1969	2,319	3,183	698	-
1970	2,574	4,087	1,309	-
1971	2,788	4,807	1,622	-
1972	3,238	5,433	1,706	-
1973	3,669	6,152[e/]	1,997	-
1974	N.A.	7,200[e/]	N.A.	-
1975 Plan	6,282	8,500[f/]	N.A.	-
1980	11,400[f/]	12,500[f/]		-

a/ Data are for calendar years.
b/ Reported supply to agriculture. Data are believed to be unadjusted for losses during transportation, storage and application.
c/ Believed to include some quantities that go for non-fertilizer uses.
d/ Data are based on an assumption that Soviet trade data on potassium salts are expressed in terms of products with an average nutrient content of 41.6% K_2O.
e/ Estimated.
f/ Based on preliminary Soviet plan for 1980.

25X1

Fertilizer Situation in Eastern Europe

Through 1975

Production

The chemical fertilizer industry in Eastern Europe* has been developing at a relatively rapid pace. During 1965-73, production increased at an average annual rate of 8% compared with only 2% in the European Community (nine present members). By 1973, East European output totaled 8.8 million tons and, on a per capita basis, exceeded output in the European Community. The most rapid growth has taken place in the production of nitrogen fertilizer (11% per year). Output of potassium fertilizer, almost all of which is produced in East Germany, increased by an average of only 4% per year

Consumption

Use of fertilizers also increased rapidly during 1965-73, although consumption per hectare of arable land is still substantially less than in the European Community. Total agricultural output and crop yields per hectare have risen substantially during the past decade or two, attributable in part to increased use of chemical fertilizers.

* Bulgaria, Czechoslovakia, East Germany, Hungary, Poland, and Romania.

25X1

The Polish Minister of Agriculture has estimated that by 1979, in comparison with the early to mid-1950's, crop yields in Poland were up by almost 60% due to greater application of fertilizer.

Foreign Trade

Eastern Europe is a net exporter of nitrogen fertilizers and a net importer of phosphate and potassium fertilizers. (See attached tables.) In 1972, Bulgaria, Poland, and Romania supplied about 650,000 tons of nitrogen fertilizers, in terms of pure nutrient, to countries outside Eastern Europe. Czechoslovakia, East Germany, and Hungary imported about 175,000 tons of nitrogen from other areas. Phosphate fertilizers and/or phosphate raw materials are imported by all East European countries from the USSR and from non-Communist countries. In 1972, East German exports of potassium fertilizers to non-Communist countries amounted to about 760,000 tons of K_2O. Although East Germany is a major exporter of potassium fertilizers, other East European countries also import large quantities from the USSR.

In 1975, Eastern Europe is expected to have an even greater exportable surplus of nitrogen fertilizers. A comparison of production plans with consumption plans would indicate that Bulgaria, Poland, and Romania will have exportable surpluses totaling about one million tons of

nitrogen in 1975. Plans indicate that East Germany will have an exportable surplus of about 2.2 million tons of K_2O in 1975 but Eastern Europe will continue to be a net importer of potassium fertilizers. Construction lags in new fertilizer plants scheduled for completion in 1974-75 are likely to cause production goals to be unfulfilled in some cases. However, corresponding cut-backs in consumption plans could maintain exportable surpluses near the projected levels.

Most of the new nitrogen fertilizer facilities in Eastern Europe are being based on natural gas feedstocks. Adequate supplies of natural gas will probably continue to be available from domestic sources or from the USSR.

Prospects for 1976-80

Information is fragmentary as yet on plans for the production and consumption of fertilizer in Eastern Europe during the latter half of the decade. Polish plans for 1980 call for an increase in production of nitrogen fertilizer by 47% over the 1975 level to 2,240,000 tons. Poland's exportable surplus of nitrogen fertilizer is to increase from 200,000 tons in 1975 to 500,000 tons in 1980. However, a Romanian official has urged that exports of energy-intensive chemicals, including nitrogen fertilizer, be curtailed as

an energy conservation measure. Production and consumption of phosphate fertilizer in Eastern Europe probably will remain more or less in balance, although imports of phosphate raw materials undoubtedly will increase. East German exports of potassium fertilizer to non-Communist countries probably will continue to grow slowly but shipments from the USSR to other East European countries probably will also rise.

Table 4

Nitrogen Fertilizer: Eastern Europe[a]

Units: 1,000 metric tons, nutrient basis (N)

	Consumption[b]	Production	Exports[c]	Imports[c]	Residual[d]
1965	1,674	1,537			
1966	1,938	1,765			
1967	2,158	2,086			
1968	2,555	2,541			
1969	2,747	3,011			
1970	2,954	3,320			
1971	3,121	3,552			
1972	3,394	3,690	650	175	-179
1973	N.A.	3,990			
1974					
1975	5,055[e]	6,008[e]	953[f]		
1980					

a/ Includes Bulgaria, Czechoslovakia, East Germany, Hungary, Poland, and Romania.
b/ In agriculture.
c/ Does not include trade between East European countries.
d/ Industrial consumption plus changes in stocks plus errors in estimates.
e/ Plan.
f/ Projected net exports (exportable surpluses totaling 1,010 thousand tons for Bulgaria, Poland and Romania minus a deficit of 57 thousand tons for Czechoslovakia).

Table 5

Phosphate Fertilizer: Eastern Europe

Units: 1,000 metric tons, nutrient basis (P_2O_5)

	Consumption	Production	Exports	Imports	Residual
1965	1,319	1,172			
1966	1,431	1,262			
1967	1,639	1,366			
1968	1,942	1,557			
1969	1,958	1,749			
1970	2,057	1,910			
1971	2,194	2,016			
1972	2,372	2,129	0	212	-31
1973		2,199			
1974					
1975	3,439[a]	3,325[a]		114[b]	
1980					

a/ Plan.
b/ Projected imports (exportable surpluses totaling 110 thousand tons for Bulgaria and Romania minus deficits totaling 224 thousand tons for the other four countries).

Table 6

Potassium Fertilizer: Eastern Europe

Units: 1,000 metric tons, nutrient basis (K_2O)

	Consumption	Production	Exports	Imports	Residual
1965	1,540	1,926			
1966	1,765	2,006			
1967	1,912	2,206			
1968	2,185	2,293			
1969	2,342	2,351			
1970	2,499	2,423			
1971	2,835	2,455			
1972	2,859	2,471	763	1,064	-87
1973		2,563			
1974					
1975	3,494[a]	3,138[a]		356[b]	
1980					

a/ Plan.
b/ Projected net imports (an exportable surplus of 2,190 thousand tons in East Germany minus deficits totaling 2,546 thousand tons in the other five countries).

The Fertilizer Situation in Egypt

Production on Egypt's multiple cropped, irrigated agricultural land has been dependent for many years on substantial applications of commercial fertilizer. Recently, demand for fertilizer has been rising between 5% and 10% a year although agricultural output has risen much more slowly. The principal factor has been the conversion of Upper Egypt from basin (simple flooding) to perennial (year round) irrigation, a system that deprives the soil of river silt and quickly depletes natural nutrients. Gradual introduction of high yielding wheat varieties also is increasing fertilizer consumption.

Some years ago extensive reclamation of new land also was expected to greatly increase the demand for fertilizer but such a development now seems much less likely. Due to a dearth both of water and of suitable land the Sadat regime has downplayed the land reclamation program. Instead the government is emphasizing drainage of water-logged land, a program with no clearly foreseeable impact on fertilizer consumption.

Phosphates

Egypt is a sizeable producer of phosphate rock and since 1967 has been a net exporter of phosphate fertilizers. Exports peaked at 34,000 tons (P_2O_5) in 1971, declining

thereafter as a result of rising domestic demand. This trend is expected to continue until a proposed 500,000 tons per annum (approximately 94,000 tons P_2O_5) extension of the Assiut processing facility is completed. Under current conditions the new units should be completed before Egypt is forced to enter the market as a net buyer (see Tables 7 and 8).

Nitrogenous Fertilizers

Egyptian consumption of nitrogenous fertilizers has fluctuated considerably during the past decade due to both external and internal constraints. Just prior to the 1967 war with Israel, Egypt produced over half of the nitrogenous fertilizer consumed and expansion programs designed to achieve self-sufficiency were nearing completion. This situation changed abruptly due to damage sustained by the Suez City petrochemical complex and its supporting facilities during the war and subsequent hostilities. Because of disrupted domestic production and an acute shortage of foreign exchange Egypt was forced to curtail consumption of nitrogenous fertilizer during the immediate post-war period. Subsequently injections of Arab aid, upgrading of the nutrient content of output, and completion of new processing facilities permitted consumption to increase to pre-war levels.

A rising consumption trend of perhaps as much as 10%

per annum is expected for the next several years. However, completion this year of a 291,000 tons per annum (about 90,000 nutrient tons) facility at Talkha should hold annual import requirements to about 250,000 tons in 1974-75. This deficit will be reduced to less than 100,000 tons per year when a second facility at Talkha, to be financed jointly by the IBRD and an Arab consortium, is completed. If power supply to the Kima fertilizer plant at Aswan can be better regulated, addition of the Talkha plant #2 could wipe out Egypt's nitrogenous fertilizer deficit (see Tables 9 and 10).

All important inputs for Egypt's nitrogenous fertilizer industry, both present and projected, are domestically produced.

Potash

In Egypt, as in most Mediterranean areas, little potash is needed. Egypt is not a producer, but nonetheless imports only small amounts on an irregular basis (see Table 11).

Table 7

Phosphate Fertilizer Production Capacity: UAR

Units: 1,000 metric tons of product

	1964[a]	1966[a]	1970[a]	1974/75[b]	1980[a]
Abu Zaabal	60	200	200	200	200
Societe Financiere et Industrielle d' Egypte	122	240	240	240	240
Assiut	-	-	200	200	700[c]
Total	182	440	640	640	1,140

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25X1

a. Calendar years.
b. Crop year.
c. Planned.

Table 8

Phosphate Fertilizer Supply and Utilization: UAR

Units: 1000 Metric Tons, Nutrient Basis (P_2O_5)

Crop Year	1965	1966	1967	1968	1969	1970	1971	1972[a]	1973[b]	1974[b]	1975[b]
Production	36.9	44.0	46.3	52.2	56.8	59.4	74.3	79.5	80.0	80.0	80.0
Exports or imports (net) (- equals export)	6.2	10.7	-3.0	-16.7	-18.2	-23.2	-34.1	-34.9	-31.0	-26.0	-21.0
Consumption	43.1	54.7	43.3	35.5	38.6	36.2	40.2	44.6	49.0	54.0	59.0

a/ Preliminary.
b/ Estimated.

Table 9

Nitrogen Fertilizer Production Capacity : UAR

Units: 1,000 Metric Tons a/

	1964b/	1966b/	1970b/	1974/75c/	1980b/
El Nasr Co. - Suez	270 (15.5%) 100 (20.6%)	270 100	0 0	0 0	0 0
Aswan (KIMA)	500 (26%)	500	500 (26-31%)	500 (31%)	500
Helwan			200 (20.5%)	200	200
Talkha #1				291 (31%)	291
Talkha #2	---	---	---	---	450d/ (45%)
Total	870	870	700	991	1,441

a. Note: Nutrient content indicated in parentheses whenever known.
b. Calendar Years.
c. Crop year.
d. Planned.

Table 10

Nitrogen Fertilizer Supply and Utilization: UAR

Units: 1,000 Metric Tons of Product

Crop Year	1965	1966	1967	1968	1969	1970	1971	1972 a/	1973 b/	1974 b/	1975 b/
Production	140.3	148.7	163.3	146.1	139.8	117.8	118.3	120.0	120.0	120.0	210.0
Imports	120.3	136.5	80.5	97.9	141.6	192.3	212.5	230.0	265.0	303.0	255.0
Consumption	260.6	285.2	243.8	244.0	281.4	310.1	330.8	350.0	385.0	423.0	465.0

a. Preliminary.
b. Estimated.

25X1

25X1

Table 11

Potash Imports: UAR

1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975
1.0 a/	6.0 a/	n/a	2.0 b/	7.4 b/	n/a	7.4 b/	.6 b/	n/a	n/a	n/a

a. Thousand metric tons K20 per annum.
b. Thousand metric tons per annum.

25X1

25X1

Fertilizer Supply Situation in the PRC

Feedstock and Raw Material Position

China has ample resources for the production of nitrogen, phosphate and potassium fertilizers. The phosphate and potassium are not developed fully, however, and in some instances are located far from major industrial centers.

Phosphate rock is the only imported feedstock. In 1973, China imported 1.8 million tons of phosphate rock or roughly 30 percent of the phosphate rock used. China's phosphate deposits are generally of such low grade that heretofore it was economical to import higher grade phosphate rock, mainly from North Africa and the Middle East. With the recent tripling in prices of phosphate rock, China probably will intensify efforts to develop domestic rock deposits.

Domestic feedstock sources for nitrogen production are plentiful. Much of China's domestically produced nitrogen uses coal gas as feedstock. China is the third largest coal producer in the world and has huge reserves. The rapid growth of the petroleum industry has provided China with a large surplus of natural gas. Thirteen newly purchased ammonia-urea complexes, with a combined annual capacity of 3.5 million tons of fertilizer nutrient, will use natural gas as the feedstock (Table 12).

25X1

Trends in Consumption

China's consumption of fertilizer will increase to an estimated 15 million nutrient tons by 1980, compared to 6.4 million tons in 1973. About 75 percent of the increase will result from a step-up in domestic production of nitrogen and phosphate fertilizer (Tables 13 and 14). A sharp increase in imports of potassium fertilizer is expected by 1980 (Table 15). Most of the potassium probably will be supplied by Canada.

25X1

Table 12

New Plant Construction: PRC

No.	Type	Capacity	Firm Name	Years of Construction
8	Ammonia	1,000 MT/day	Kellogg US	1975-78
8	Urea	1,620 MT/day	Kellogg Cntl. Netherlands	1975-78
2	Ammonia	1,000 MT/day	Toyo Japan	1976-77
2	Urea	1,600 MT/day	Mitsui Toatsu Japan	1976/77
3	Ammonia	1,000 MT/day	Huerty Ind. France	1976-78
3	Urea	1,740 MT/day	Huerty Ind. France	1976-78

Table 13

Phosphate Fertilizer: PRC

Units: 1,000 metric tons, nutrient basis (P_2O_5)

	Consumption	Production	Exports	Imports
1964	370	336	(Neg)	33
1965	527	482		45
1966	713	703		10
1967	561	550		11
1968	721	712		9
1969	954	951		3
1970	1154	1154		0
1971	1299	1299		0
1972	1440	1430		10
1973	1948	1865		83
1974	2300	2250		50
1975				
1980	3900	3900		(Neg)*

25X1

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*Phosphate rock will be imported but not phosphate fertilizer.

Table 14

Nitrogen Fertilizer: PRC

Units: 1,000 metric tons, nutrient basis(N)

25X1

	Consumption	Production	Exports	Imports
1964	796	472	(Neg)	324
1965	1203	613		590
1966	1425	713		712
1967	1695	568		1127
1968	2046	839		1207
1969	2497	1193		1304
1970	2989	1509		1480
1971	3374	1899		1475
1972	3905	2370		1535
1973	4235	2875		1360
1974	4400	3400		1000
1975				
1980	8500	8500		0

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Table 15

Potassium Fertilizer: PRC

Units: 1,000 metric tons, nutrient basis (K_2O)

25X1

	Consumption	Production	Exports	Imports
1964	0	0	(Neg)	0
1965	23	18		5
1966	30	30		0
1967	64	48		16
1968	99	80		19
1969	108	100		8
1970	119	114		5
1971	148	143		5
1972	159	154		5
1973	242	167		75
1974	380	200		180
1975				
1980	2600			2000

25X1